Claims

1. An optical device comprising:

an input fiber having a cladding and a core for receiving a light input;

a target fiber having a cladding and a core for;

the cladding of the input fiber and the cladding of the target fiber being close together to define a coupling region in which light is coupled from the cladding of the input fiber to the cladding of the target fiber;

a first perturbation for wavelength-selective coupling of light from the core of the input fiber into the cladding of the input fiber; and

a second perturbation for wavelength-selective coupling of light from the cladding of the target fiber into the core of the target fiber,

wherein one of the first and second perturbation is in the cladding.

2. The device of claim 1, wherein the coupling region is between 1mm and 500mm long along a lengthwise direction of the fibers.

3. The device of claim 1, wherein the fibers are no more than about 10 microns apart in the coupling region.

4. The device of claim 1, wherein the second perturbation is formed in the cladding of the target fiber.

5. The device of claim 4, wherein the core of the target fiber does not have a wavelength-selective perturbation.

6. The device of claim 1, wherein the first perturbation is formed in the cladding of the input fiber.

7. The device of claim 6, wherein the core of the input fiber does not have a wavelength-selective perturbation.

8. The device of claim 6, wherein the second perturbation is formed in the cladding of the target fiber.

9. The device of claim 8, wherein neither the core of the input fiber nor the core of the target fiber has a wavelength-selective perturbation.

10. The device of claim 1, further comprising a third fiber with a core and a cladding and a third perturbation formed in one of the core and cladding of the third fiber, wherein the target fiber is used to remove light with a first wavelength from the input fiber, and wherein the third fiber receives a light input and is positioned close to the input fiber to define a coupling region to couple light with a second wavelength from the third fiber into the input fiber, the third fiber being used to add light with a desired wavelength.

11. The device of claim 10, wherein the first and second wavelengths are the same.

12. The device of claim 1, further comprising third perturbation for wavelength-selective coupling of light from the cladding of the input fiber to the core of the input fiber, the perturbations being arranged such that light with a first wavelength is input to the target fiber and included in an output of the input fiber, and light with a second wavelength is dropped from the input fiber.

13. In the optical device of claim 1, further comprising a third fiber having a core and a cladding with the core of the third fiber receiving a light input and providing some of the received light to the target fiber, the third fiber having a third perturbation for wavelength-selective coupling of light from the core of the third fiber into the core of the target fiber, the claddings of the third fiber and the target fiber being close together in a second coupling region, a method of introducing into the input fibers light so that a portion of light from each of the input fibers combines in the target fiber.

14. The method of claim 13, wherein the introducing is performed with pump lasers.

15. The method of claim 13, wherein the light that is introduced results in light in the target fiber that is sufficiently intense for use as a pump for a fiber laser.

16. An optical device comprising:

a first fiber having a cladding and a core for receiving a light input;

a second fiber having a cladding and a core, the cladding of the first fiber and the cladding of the second fiber being close together to define a coupling region in which light is coupled from the cladding of the first fiber to the cladding of the second fiber;

a first perturbation for wavelength-selective coupling of light from the core of the input fiber into the cladding of the input fiber;

a second perturbation for wavelength-selective coupling of light from the cladding of the target fiber into the core of the target fiber;

a third fiber having a cladding and a core, the cladding of the third fiber and the cladding of the first fiber being close together to define a coupling region in which light is coupled from the cladding of the third fiber to the cladding of the first fiber;

a third perturbations in the third fiber for wavelength-selective coupling of light from the core into the cladding of the third fiber; and

a fourth perturbation for wavelength-selective coupling of light from the cladding of the input fiber to the core of the input fiber;

the fiber and perturbations being arranged to form an add/drop multiplexer.

17. An optical device comprising:

a first fiber having a cladding and a core for receiving a light input and providing an output;

a second fiber having a cladding and a core;

the cladding of the first fiber and the cladding of the second fiber being close together to define a coupling region in which light is coupled from the cladding of the first fiber to the cladding of the second fiber;

a first perturbation for wavelength-selective coupling of light from the core of the first fiber into the cladding of the first fiber;

a second perturbation for wavelength-selective coupling of light from the cladding of the second fiber into the core of the second fiber;

wherein the target fiber receives a light input and the second perturbation provides wavelength-selective coupling from the input of the target fiber to the cladding of the second fiber and the coupling region couples the light from the cladding of the second fiber to the cladding of the first fiber; and

a third perturbation in the input fiber for wavelength-selective coupling of light from

the cladding of the first fiber into the core of the first fiber, the device thereby forming an add/drop multiplexer in which the second fiber is used to add and drop light at the desired wavelengths.

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18. An add/drop multiplexer consisting essentially of two optical fibers positioned close together to allow compiling between the cladding of the two fibers.

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